

Lower Passaic River Study Area High Volume Chemical Water Column Monitoring QAPP Revision 0 (04/2012)

Response to EPA Comments on Worksheets #9, 10, 11, 17, 18 and Additional Comments including SOPs

No.	Section/ Worksheet No.	Comment	Response
1	General Comments	The frequency of sampling described in this QAPP is not sufficient. The first round should be collected and analyzed using rapid turnaround. A decision will be made as to whether additional rounds of sampling should be conducted using the same procedures/approach. Please revise the QAPP to reflect this, as was done for the low volume CWCM program.	The QAPP will be revised to indicate that, similar to the SV CWCM program, the first round of HV data will be analyzed using a rapid turnaround. As discussed with EPA June 14, 2012, analyses will be provided to AECOM using a 30-day turnaround time. The unvalidated results of the first round of sampling will be reviewed by the CPG and EPA, who will then discuss the potential need for additional rounds of HV sampling.
2	General Comments	Neither the QAPP analytical worksheets nor analytical SOPs address the analysis of polyurethane foam sorption (PUF) medium. SOP A-1 has a section discussing the extraction of PUF used in an air sampling train but not water sampling. Information for this "matrix" needs to be captured on Worksheets 12, 15, 19, 20, 21 and 23. Additionally the extraction and analytical procedure for analysis of the PUF sample with a water matrix must be added to SOPs A-1, T-5 and any other SOPs under which this matrix will be analyzed.	As requested, EPA was provided with a sub-set of worksheets and draft analytical SOPs. The final SOPs and project-specific addenda, which address this general comment, were provided to EPA on June 18, 2012.
3	General Comments	Please forward the laboratory results from the comparison of using the polyurethane foam (PUF) sorbent media versus the Infiltrex™ XAD-2 resin, and provide the rationale for using the PUF filter.	These data will be provided to EPA under separate cover. The data support the use of PUF in HV sampling. The capture efficiency of PUF was proven to be as effective, if not more effective, than XAD resin. Furthermore, PUF is provided as a new sorbent material with each use and is not regenerated as is XAD resin.

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4	Worksheet # 9 After Page 3	<p>Kristen Durocher (AECOM) and Ed Garland (HydroQual) had a phone conversation on August 20, 2010 which should be included as part of Worksheet # 9. In particular, the following information was discussed:</p> <ul style="list-style-type: none"> a. HDR/HydroQual expressed concern with the detection limits that may be achieved during the small volume program. The CPG suggested that the high volume program will be used to fill data gaps. b. HDR/HydroQual mentioned that one DUO which had not been discussed previously was to develop estimates of loads above Dundee Dam and the 3 major freshwater tributaries. The CARP program found that measurement of dissolved phase constituents in the freshwater loads had less variability than particulate phase. CPG agreed to discuss internally whether high volume sampling in the freshwater boundaries should be conducted more frequently than elsewhere in the river to meet this DUO. c. The parties agreed that a series of meetings would be justified to discuss issues related to the high volume program. 	<p>The phone conversation between Kristen Durocher (AECOM) and Ed Garland (HydroQual) from August 20, 2010 will be included in Worksheet #9.</p> <ul style="list-style-type: none"> a. Acknowledged. The CPG agreed to consider using the HV sampling to achieve lower detection limits. b. Acknowledged. HDR/HydroQual has indicated to the CPG their desire to have multiple HV CWCM measurements at the tributaries. The CPG discussed the need for sampling in the freshwater boundaries using the HV methods. c. Acknowledged.
5	Worksheet # 9 Page 4 of 6	<p>January 26, 2012 session notes should include comment from the CPG technical committee that they have concerns about CARP high-volume data, which is relevant if the CPG high-volume program is proposed to supplement the CARP data-derived partition coefficients.</p>	<p>Acknowledged. Worksheet #9 will include this comment.</p>

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6	Worksheet # 9 Pages 5 to 6	<p>March 22, 2012 session notes should include:</p> <ol style="list-style-type: none"> 1) The comment from the CPG technical committee that they have concerns about CARP high-volume data (see above). 2) The comment from the USEPA modeling team that the CPG team has extensive data from Hudson (AQEA) and Housatonic (M&N) that should be analyzed to characterize the variability in boundary loading estimates resulting from the number of samples proposed in the CWCM program. 3) A correction to the number of DUO's listed from three to four. The same slide discussed at the January 26, 2012 session was shown again. Those four DUO's are listed in the notes from the January 26, 210 session; they are: <ol style="list-style-type: none"> a. Site Specific Partition Coefficients b. Lower Detection Limits c. Comparison of model computations to dissolved and particulate phases d. Estimation of boundary conditions 	<ol style="list-style-type: none"> 1. Acknowledged. This comment will be included. 2. Acknowledged. This comment will be included. 3. There were four DUOs presented in the January 26, 2012 meeting, but only three were listed specifically in the March 22, 2012 call. However, lower detection limits will be accomplished in a HV sampling program, and this DUO will be included in Worksheet #9.

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7	Worksheet # 10	<ul style="list-style-type: none"> a. The focus on the objective of estimating site-specific partition coefficients understates the importance of other objectives listed above as items b, c, and d. The text should be revised to be more balanced. b. The QAPP states that the dissolved-phase for the HV-CWCM program will be operationally defined by the 0.7 um filter size. It should be stated (for clarification) that for consistency with the SV-CWCM program, suspended solids, dissolved organic carbon, and particulate organic carbon will also be operationally defined by the 0.7 um filter size. c. In the first bullet statement, delete the word “apparently.” The dissolved-phase is operationally defined by the 0.7 um filter. (Please scan the document and edit as appropriate; for example, “apparently dissolved fraction” also appears in WS11). d. In the third bullet statement, delete the words “USEPA believes.” The bulleted sentence should read: “Develop a set of partitioning coefficients that may improve” 	<ul style="list-style-type: none"> a. The CPG’s primary DUO for the HV program is estimate partition coefficients in the study area. The QAPP will be modified to include additional information on how the program will achieve the other DUOs. b. This worksheet will be modified as suggested to confirm using a 0.7 um filter provides consistency between the HV CWCM program and the SV CWCM program, and that SSC, DOC and POC will also be operationally defined by the 0.7 um filter size. c. The word “apparently” will be removed. Reference to dissolved phase will include “operationally defined as passing through a 0.7 um filter” throughout the QAPP. d. “USEPA believes” will be removed from this bullet.

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8	Worksheet # 11; page 2 of 5	<ul style="list-style-type: none"> a. First bullet on page: The dissolved-phase concentration and solid-phase concentrations will likely be utilized in a number of project evaluations. Please revise text accordingly. b. Third bullet on page: Specific gravity should be included in the parameter list to be consistent with other sections of the CPG QAPP. c. Fourth bullet on page: The starting and ending time should also be recorded. d. Fifth bullet on page: The text states that the overall quality of the data will be examined upon completion of the HV sampling event. This does not address the need to document in the QAPP the required “goodness” of the data to support the data use objectives (DUOs). State specifically what level of data quality is required or refer to the chemical water column QAPP section that provides this information. e. Last bullet on page: One round of sampling is not sufficient. As discussed in the general comments, the work can stop after the first round is collected and analyzed (using rapid turnaround) to determine whether additional rounds should be collected (i.e., if the data is useful), but one round will not fulfill the DUOs for the program. We can discuss how many rounds should be collected. 	<p>a. Acknowledged. See response to Comment #7a, above.</p> <p>b. It is assumed that the reviewer is referring to the omission of specific conductivity. This parameter will be added to the parameter list.</p> <p>c. Agreed. The recording of start and end times will be added to Worksheet #11, and is part of the HV sampling SOP.</p> <p>d. Worksheet #15 provides information on the detection limits and quantitation limits for the HV data. Worksheet #12 provides the acceptance criteria and limits for QC. These worksheets will be referenced in Worksheet #11.</p> <p>e. See response to Comment #1.</p>
9	Worksheet # 11; page 4 of 5	Under “Temporal Considerations,” the text states that sampling will be conducted independent of tides. Samples at the tidal boundaries should be collected on the incoming tide (as possible).	Agreed. To the extent possible, the window of time for incoming tides will be targeted for tidal boundary locations. This will be added to Worksheet #11. However, this will not be a criterion given the temporal duration required for HV sampling.
10	Worksheet # 11; page 5 of 5	The data deliverable should be organized such that surrogate recoveries (which are provided in the final MEDD) are easily connected to the field sample, so that the data user can evaluate the extent of surrogate recovery corrections that were applied on the dissolved-phase concentration.	Agreed. This will be included in the QAPP.
11	Worksheet #17; page 2 of 2	In the second paragraph, specific conductivity was omitted from the list of parameters to be monitored. Specific conductivity was included on Worksheet #11 page 2 of 5 in the first paragraph. Please revise text.	Specific conductivity will be added to this paragraph.

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12	SOPs	<p>Add a sampling SOP that includes, but is not limited to:</p> <ul style="list-style-type: none"> a. Pump rate limitations – field observations that need to be performed to confirm optimal pumping rate b. Back pressure limit – the field observations above 5 pounds per square inch seemed to indicate that there would be some amount of water perched on the filter. c. Process for folding and transferring the filter into the collection jar. d. Process for emptying/rinsing vortex. e. Dynamic spike volume, timing, and compounds. f. Method for taking field duplicate samples. g. Sample collection procedure for total water from simultaneous sampling vessel. 	<p>A detailed sampling SOP will be included in the HV QAPP. The SOP will include these major points, and is being revised to reflect the conditions specific to the study area.</p>
13	SOPs	<p>Add an extraction SOP that includes, but is not limited to:</p> <ul style="list-style-type: none"> a. Process for transferring filters from sample jar to extraction thimble b. Number of filters that can be efficiently extracted in one vessel 	<p>Laboratory SOPs will be included.</p>
14	SOPs	<p>Add an analysis SOP that includes, but is not limited to:</p> <ul style="list-style-type: none"> a. Data quality criteria for analysis of filter media b. Data quality criteria for analysis of PUF media c. Data quality criteria and evaluation procedure for PUF dynamic spike d. Data quality criteria and evaluation procedure for PUF breakthrough 	<p>The information requested in this comment is presented in Worksheets #12 and #28 and Laboratory SOPs and addenda, which were provided to EPA on June 18, 2012. Analysis is covered in Analytical Perspectives SOP AP-1 and AP-3.</p>

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15	May 10, 2012 Gravity Equipment Demonstration	During the demonstration, while changing out the filter it was noted that the water perched on the filter would flow off the filter onto the plate. This water carried loose solid material off the filter leading to a loss in sample mass. The technique used to remove the flat-filter pad and collected solids should be modified to reduce the likelihood of spilling solids. For example, after folding the filter pad in half twice, perhaps the filter pad should be lifted from the outside edge of the pad, rather than from the center. The SOP should be modified to address this issue.	<p>Agreed. The CPG team noted this as well, and several modifications to the sampling procedure will be employed to minimize the perching of water and loss of solids on the filter including:</p> <ol style="list-style-type: none"> 1) lifting the filter by the edge rather than from the folded middle, as suggested in the comment; 2) adding a 25 um pre-filter; and, 3) layering a second 0.7 um filter on top of the filter to be removed such that it absorbs exceed perched water and retains the solids. <p>These details will be included in the HV sampling SOP.</p>
16	May 10, 2012 Gravity Equipment Demonstration	Based on the results of the field test, what is the CPGs expectation of the volume of water needed to obtain the required analytical mass?	The volume of water likely necessary to achieve adequate sample mass varies from a few hundred to up to almost 1,000 liters, depending on the location being sampled. Details are provided in Worksheet #15.
17	May 10, 2012 Gravity Equipment Demonstration	Several members of the EPA team expressed concern about the representativeness of the samples collected from the 20 liter carboy for suspended sediment and particulate organic carbon analyses. This concern could be evaluated quantitatively by collecting multiple samples that contain the entire 20 liter volume and evaluating the variability of the results.	Acknowledged. To account for potential heterogeneity in the water column of the carboy, up to 4 replicate samples will be collected from the carboy for analysis of the physical parameters (SSC, POC and DOC). Collection of 4 replicate samples will account for 10L of water from the carboy. The QAPP will be modified to include this information.

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18	May 10, 2012 Gravity Equipment Demonstration	<p>Information about pumping rates, pumping durations, mass of solids collected and ambient solids concentrations are inconsistent. Gravity and the CPG mentioned that the prior day's sampling resulted in the collection of approximately 6 grams of sediment after filtering 50 liters of water. This corresponds to a solids concentration of 120 mg/l, which would be a high concentration for the conditions that week. On the day of the demonstration, Gravity was estimating collection of several grams (2-4) of sediment, but reporting concentrations from the LISST of near 10 mg/l. At a pumping rate of 0.5 L/min and 10 mg/l, it would take 6.7 hours to collect 2 grams of dry sediment. This is an important issue to resolve because if the lab needs 2 to 4 grams of dry solids, the pumping time would be much longer than the CPG team was mentioning during the demonstration.</p> <p>Figure 1 shows the pumping time required to collect 2, 4, and 6 grams of dry sediment as a function of the ambient suspended sediment concentration. Given concerns expressed by the CPG about difficulty staying on station with the amount of ship traffic, consideration should be given to collecting large volumes of water quickly and transporting the samples to a fixed location for processing. Figure 2 shows the volume required to be pumped to obtain 2, 4, and 6 grams of dry sediment as a function of the suspended sediment concentration. This pumping volume would be required regardless of whether the sample is processed in the field or at a land-based location.</p>	<p>The data from the LISST were highly varied over the course of sampling during each of the samples collected. From the first sample collected during EPA oversight, measured concentrations ranged from 4.7 to 2,192 microliters per liter (ul/L), with an average concentration of 43.6 ul/L. Since the LISST measures on a volume/volume and not mass/volume basis, these data should be used to evaluate the need for filter changes and to support the SSC data qualitatively. These are part of the "lessons learned" from the field demonstration. The QAPP (Worksheet #15 submitted to EPA on June 18, 2012) indicates that the volume of water will be based on known and measured SSC concentrations, with qualitatively support from the LISST.</p> <p>Transportation of hundreds of liters of water to the facility for processing is a difficult process and the logistics to do so could be cumbersome or prohibitive. Additionally, rinsing such large containers, or multiples of smaller containers, to ensure no HOCs are "clinging" to the sides of the containers is not feasible. The CPG will collect and process the water on station.</p>
19	May 10, 2012 Gravity Equipment Demonstration	<p>Please provide further information on the rationale for target sample solids mass, how the data from the demonstration will be evaluated to estimate achievable analytical sensitivity, and how an adequate sample mass will be confirmed in the field (considering that TSS and solids contaminant concentrations may vary throughout the tidal cycle and across sampling locations). When estimated detection limits are provided in the CPG QAPP Worksheet 15, the associated sample mass should be identified.</p>	<p>This information, included in Worksheet #15, was provided to EPA on June 18, 2012 as part of the second interim QAPP submittal.</p>

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20	May 10, 2012 Gravity Equipment Demonstration	The QAPP should confirm the frequency/quantity of field blanks and equipment blanks that will be collected and analyzed during the HV-CWCM program. Based on the discussion during the field demonstration, we understand that there will be one field blank per batch of pre-cleaned laboratory equipment and there will be one equipment blank collected after each sampling location.	Per Worksheet #20 (provided to EPA on June 18, 2012) and consistent with the SV CWCM program, one equipment/rinsate blank will be collected per field team for each set of decontaminated sampling equipment. The additional field blank collected during the field trial was part of the laboratory equipment testing only.
21	May 10, 2012 Gravity Equipment Demonstration	The CPG should provide text in the QAPP discussing the independence of partitioning coefficients from tidal conditions, even though water column solids concentrations are expected to vary. Alternately, the CPG should consider collecting large volume water column samples rapidly/synoptically in the field and transporting them back to a field facility for subsequent processing.	The HV CWCM program is not intended to provide information about changeable conditions due to tides. This will be clarified in the QAPP. The logistical difficulties associated with the transportation of large volumes back to the field facility for processing were addressed in response to Comment #18.
22	May 10, 2012 Gravity Equipment Demonstration	The CPG field team proposes to collect one field sample per location, which will yield one partitioning coefficient per location. To bound these coefficients with some reasonable degree of uncertainty, it is recommended that at least two field duplicates (or co-locates) be collected during the sampling event.	The CPG will collect one field duplicate as a co-located sample as outlined in Worksheet #20 (provided to EPA on June 18, 2012).
23	May 10, 2012 Gravity Equipment Demonstration	Based on observation of the field demonstration, it appeared that most of the solids were by-passing the vortex separator and were being captured on the flat filter. Consequently, the flat filters were the dominant collection system for the solids phase. The CPG should consider the use of a cartridge filter ahead of the flat filter to reduce the need for frequent flat filter blinding and change-out. As has already been noted, difficulties with the handling of the flat filter were observed in the field (turbid standing water on top of the filter during change-out) and procedures should be developed to avoid allowing solids to be lost/spilled from the sample or to be inadvertently captured in the dissolved-phase portion of the apparatus. It is recommended that the flat filters be handled separately from the water and solids captured by the vortex. Furthermore, the QAPP should provide more information on how Analytical Perspectives (the CPG laboratory) plans to process and analyze the water and solids collected via the vortex.	<p>The CPG, upon discussion with the Analytical Perspectives, feels a cartridge filter would be difficult to process. The CPG acknowledges the concerns associated with the 0.7 um flat filter, and will include a 25 um flat pre-filter in the HV sampling procedure. This will provide an additional layer of filtration.</p> <p>The HV sampling SOP has been modified based on lessons learned during the field demonstration to include this pre-filter, as well as ways to avoid loss of solids during filter changes.</p> <p>The flat filters are part of the sample as the solids (and minimal rinsate water) collected in the vortex. They will not be handled or processed separately.</p> <p>The lab SOP (provided to EPA on June 18, 2012) provides details on processing and analysis of water and solids collected using the vortex and flat filters.</p>

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24	May 10, 2012 Gravity Equipment Demonstration	Based on discussions during the field demonstration, the CPG have elected to conduct co-located sample collection versus field duplicate sampling, and laboratory replicates are not currently planned. Please clarify in the QAPP how precision and accuracy will be assessed during the HV-CWCM program.	This information will be provided in the QAPP. As discussed during the June 14, 2012 teleconference, the CPG would welcome any insight from EPA on their experience with measuring precision and accuracy from the HV sampling EPA conducted in the study area.
25	May 10, 2012 Gravity Equipment Demonstration	The final QAPP should provide clear measurement performance criteria for the dissolved-phase surrogate recoveries, especially since it is anticipated that the dissolved-phase concentrations will be corrected for the surrogates lost during the field filtration process. Also, as discussed during the field demonstration, the final QAPP should include a list of labeled surrogates that will be used to assess the efficiency of the polyurethane foam (PUF) cartridge.	The measurement and performance criteria information is in Worksheet #28, provided to EPA on June 18, 2012. The Analytical Perspectives SOP (No. AP-CM-14, Revision 1) includes a list of standards for each spike. This SOP was also provided to EPA in the June 18, 2012 submittal.
26	May 10, 2012 Gravity Equipment Demonstration	Several large particles were visually observed in the 20 liter carboy container. It is recommended that suspended solids, dissolved organic carbon, and particulate carbon samples be collected from the carboy and analyzed in replicate to assess the uncertainty for these values. Replicate values are critical to assess the ability of the CPG field team to sub-sample the surface water collected in the carboy and because these parameters will ultimately be used in unit conversion calculations.	See response to Comment #17.
27	May 10, 2012 Gravity Equipment Demonstration	During the field demonstration, it was observed that the sampling intake tube inside the 20 liter carboy was curved and its end was nearly adhering to the side of the carboy during the collection of the water samples for TSS and organic carbon. It is recommended that the intake tube design be modified for future sampling so that the tube maintains a straight drop and is collecting water from the center of the carboy. A larger magnetic stir bar is recommended during sampling based on the carboy volume.	During collection of samples from the carboy, the intake tubing will be kept central and away from the sides of the carboy. These modifications will be incorporated into the protocol described in Worksheet #21.
Additional Comments for Worksheets 9, 10, 11, 17 and 18 plus SOPs received 6/20/12			
1	Worksheet #11 Page 2	Second bullet under the question "What types of data are needed?": Language should be added to describe how the total volume of water processed will be measured and recorded for later use in these calculations.	References will be made in Worksheet #11 to Worksheet #15, which presents the equations for estimating total volume of water to be sampled, and example calculations.

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2	Worksheet #11 Page 3	Under the question “Where, when and how should the data be collected/generated?”: Methods and calculation procedures to develop the partition coefficients should be described in this worksheet. How will the coefficients be calculated for each sampling event?	The HV QAPP covers the collection of the data. Interpretation of the data will not be included in the QAPP.
3	Worksheet #17 Page 1	Figure 1 not included.	Figure 1 will be included in the complete QAPP to be submitted to EPA.
4	Worksheet #17 Page 2	Second paragraph, second sentence: This could be an important variable. The flow rate will change as the filter captures sediments (causing back-pressure and reduced flows) and with changing tide (head, and therefore, flow rate, will change assuming the mid-water column level is continuously adjusted throughout the sampling duration). Flow rate should either be measured continuously and integrated to get volume, or at specific and reasonably frequent intervals. Also, depending upon the measurement method, there will be variability in the flow measurements that will be mitigated, to some extent, by more frequent measurements that are either averaged or “blended” by plotting a flow-rate curve for the event.	Acknowledged. With the PR2900 system, flow rates are measured continuously, and the instrument records sample volume in real time. This information is included in the HV sampling SOP.
USEPA’s specific comment no. 14 consists of a request for the organic analytical SOPs; however, to expand upon our request, the comments listed below provide further guidance on the elements that the SOP should explicitly address			

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5	SOPs	<p>An analytical SOP for Dioxins/Furans should be added that includes, but is not limited to:</p> <ul style="list-style-type: none"> a. Descriptions of any necessary adjustments or modifications to carbon labeled spiking mixtures. Laboratory bench spiking protocols should be explicitly defined. b. Detailed holding time and storage temperature requirements in addition to any specific storage practices. c. Comprehensive details regarding the handling of particulate phase samples including quantitative transfers, sub-sampling and hydromatrix addition. d. A procedure for using two serial PUFs or explanation of how potential breakthrough analytes will be addressed in the sampling system if using only a single PUF. If a single PUF is used, then a stepwise plan of approach for analysis of congener PCBs and dioxins/furans must be included. e. The extraction method of congener PCBs and dioxins/furans from particulate samples. If extracted as a single aliquot, then the stepwise extraction and analysis procedures must be included. f. Detailed explanations of exactly how results for particulate and dissolved phase analyte concentrations will be calculated based upon other measurements such as total volume of water collected and SSC. 	<p>The SOPs were submitted to EPA on June 18, 2012.</p> <ul style="list-style-type: none"> a. Spiking protocols are provided in SOPs and addenda. b. Holding time and storage are provided in Worksheet #19 of the HV QAPP. c. Refer to Analytical Perspective SOP AP-CM-5 and the associated high volume sampling addendum. d. A single PUF will be used in sampling. As discussed in the June 14, 2012 conference call with EPA, the dynamic spike and static spikes will be used to evaluate potential breakthrough. e. Refer to the Analytical Perspective SOPs AP-CM-5 and AP-CM-7. f. The laboratories will be responsible for providing results for the solids and PUF and will not be responsible for calculating particulate and dissolved concentrations. The calculations requested by EPA in this comment are explained in Worksheet #37 of the HV QAPP.

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6	SOPs	<p>An analytical SOP for Congener PCBs should be added that includes, but is not limited to:</p> <ul style="list-style-type: none"> a. Descriptions of any necessary adjustments to analytical carbon labeled spike mixtures. For instance, example standards included in new high volume specific mixtures must be removed from the "extraction standard." Additionally, bench/field spiking protocols must be included. b. Explicit details concerning the creation of multi-component samples. Any project specific procedures must also be included in a stepwise SOP. c. Detailed holding time and storage temperature requirements in addition to any specific storage practices. d. Comprehensive details regarding the handling of particulate phase samples including quantitative transfers, sub-sampling and hydromatrix addition. e. A procedure for using two serial PUFs or explanation of how potential breakthrough analytes will be addressed in the sampling system if using only a single PUF. If a single PUF is used, then a stepwise plan of approach for analysis of congener PCBs and dioxins/furans must be included. f. The extraction method of congener PCBs and dioxins/furans from particulate samples. If extracted as a single aliquot, then the stepwise extraction and analysis procedures must be included. g. Detailed explanations of exactly how results for particulate and dissolved phase analyte concentrations will be calculated based upon other measurements such as total volume of water collected and SSC. 	<p>The SOPs were submitted to EPA on June 18, 2012.</p> <ul style="list-style-type: none"> a. Spiking protocols are provided in SOPs and addenda. b. All the necessary detail is included in SOP AP-CM-7 and the associated HV sampling SOP addendum. c. Holding time and storage are provided in Worksheet #19 of the HV QAPP. d. Refer to Analytical Perspective SOP AP-CM-7. e. A single PUF will be used in sampling. As discussed in the June 14, 2012 conference call with EPA, the dynamic spike and static spikes will be used to evaluate potential breakthrough. f. Refer to the Analytical Perspective SOPs ACM-CM-5 and AP-CM-7. g. The laboratories will be responsible for providing results for the solids and PUF and will not be responsible for calculating the dissolved and particulate concentrations. The calculations requested by EPA in this comment are explained in Worksheet #37 of the HV QAPP.
7,8		No comments numbered 7 or 8 provided by EPA.	
9	SOPs	<p>An analytical SOP for Particulate Carbon in Water by Combustion/Thermo-Conductivity or Infrared Detection that includes, but is not limited to:</p> <p>Delineated determinative steps for sample preparation and analysis.</p>	<p>The analytical SOPs were provided to EPA on June 18, 2012. Refer to SOP GEN-PC PN POC PREP.</p>

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10		EPA requests that the CPG continue Performance Evaluation (PE) sample analyses following QAPP review and during actual field sample collection. EPA also requests the results of Analytical Perspectives' MDL study for these analyses, if such studies have been completed.	<p>The PE program is described in Worksheet #20 (provided to EPA on June 18, 2012). Analyses of pre-program PE samples will occur if the HV sampling is initiated more than six months from the last round of PE samples. Analysis of PE samples during the field sample event is planned as described in Worksheet #20.</p> <p>Analytical Perspectives does not have an MDL study for the analyses associated with HV sampling.</p>
11		<p>The system must be cleaned as it would be in the field and an equipment blank re-run to demonstrate that the system can be successfully cleaned and that the PUF, for example, does not have trace levels of PCBs inherent in the manufacturing process.</p> <p>At a minimum, another pre-program rinse blank needs to be run and rinse blanks must be taken between events to prove that the system is properly cleaned between sampling stations. Each rinse blank must be processed using sufficient volume of de-ionized water and pumping time/rates to mimic sample collection processing parameters to ensure contaminant contact times match those during sample collection.</p>	<p>Per Worksheet #20 (provided to EPA on June 18, 2012) and consistent with the SV CWCM program, one equipment rinsate blank will be collected per field team for each set of decontaminated sampling equipment. The additional field blank collected during the field trial was part of the laboratory equipment testing only.</p> <p>Analytical Perspectives pre-extracts the PUF upon receipt from the manufacturer. The laboratory has historical verification that the pre-extraction cleans the PUF to non-detect levels. The equipment blanks will provide a check that the PUF is contaminant-free.</p>
12		<p>Amendment to EPA's specific comment no. 12.: The requested sampling SOP should also address evaluation and calibration of the pumping rates in the lines to the Gravity device and the carboy for SSC sampling. Is the flow rate through the PR-2900 identical to the flow rate through the LISST and into the container from which the POC, DOC, and SSC measurements are taken? While a slight difference might be acceptable for a brief sampling interval, over the space of several hours, this could be significant.</p> <p>Has CPG/Gravity evaluated the flow-rates in the two lines?</p> <p>Has CPG/Gravity calibrated the flow-rates in the two lines? If so, please provide the data (include number and duration of tests, plus description of method – presumably what we observed at the Demonstration).</p>	<p>The flow rates for the two pumps will be determined in the field. The PR2900 will be set to pump at a rate of 1.5 L/min, as described in the QAPP and HV SOP. The rate of the pump for the carboy will be calibrated in the field using a graduated cylinder and stopwatch as described in the SOP SW-19. The rate will be scaled depending on the volume of water being sampled using the PR2900, assuming a "full" carboy is 15L (to prevent overfilling). For example, if the target total volume using the PR2900 is 150L, the rate of the carboy pump will be 0.15L/min (10% of the PR2900 rate). This will be presented in Worksheet #21 of the HV QAPP.</p> <p>Data will be documented in the field and provided in the reporting of the data.</p>

Lower Passaic River Study Area High Volume Chemical Water Column Monitoring QAPP Revision 0 (04/2012)

Response to EPA Comments on Worksheets #9, 10, 11, 17, 18 and Additional Comments including SOPs

No.	Section/ Worksheet No.	Comment	Response
13		During the field demonstration, we observed that multiple flat fibers were used. How are the number of flat glass fiber filters going to be handled to minimize the blank contamination?	Each filter will be packaged separately during the HV sampling, minimizing exposure of the unused filters to ambient conditions. Filter changes will be conducted as efficiently as possible, minimizing ambient exposure.
14		What is the impact on the PUF if there is breakthrough of the filter? Has the impact of larger particles on/in the PUF been evaluated? What is the pore size of the PUF media relative to the 0.7um filter? Could the PUF media pore size be greater than 0.7 um such that HOCs adsorbed on particulates less than 0.7 um may pass through the PUF and not be quantified? This could potentially impact the establishment of partition coefficients.	<p>A 25 um pre-filter has been added and the pressure cut-off (the point at which filters will be changed) has been lowered to 5 psi to address concerns with filter-breakthrough.</p> <p>The 0.7 um filter size defines the “solid” vs. “dissolved” fractions of the water column. PUF is not a filtration device, but a sorbent. The PUF will sorb dissolved HOCs from the water column. While there may be a potential for particles to pass through the PUF, adding a second PUF is not an effective means to account for breakthrough.</p>